

ELASTIC BALL

BACKGROUND OF THE INVENTION

1. Field of the Invention

[0001] The present invention relates generally to an elastic ball, and more specifically, to a transparent elastic ball made of polyurethane (PU) containing ornaments floating inside as a toy or a decoration article.

2. The Prior Arts

[0002] A decoration ball containing liquid inside is mostly made of glass so far, for example, a hollow crystal ball filled with fluid and having a house or an angel ornament in the center of the ball, and white powders floating around the ornament while the ball is being swayed. However, it is usually placed on a table or displayed in a cabinet for appreciation only, to carry it out and play with it as a bouncing ball is not possible, due to the nature of the glass/crystal ball.

[0003] Another elastic ball is a solid elastic ball, which is generally made of rubber or PU. Due to its unitary color and small size, they do not give the same visual attraction to kids as the decorating glass ball. Yet, another elastic ball with a doll, a lighting element, or a sounding device inside is more attractive to children but still bores them or adults due to its regularity of sound, light or figure.

SUMMARY OF THE INVENTION

[0004] In view of the mentioned defects, the present invention is to provide an elastic ball comprising a transparent surface layer of a hollow sphere, a sealing device attached on a transparent surface layer including a coupling and a rubber sheath, in which the coupling is formed by overlapping conic bodies one after another in the order from the smallest one all the way up to the largest one, and is provided with an inscribed tangential common point on their base circumferences and a channel

defined in a middle conic body; and the rubber sheath is externally sleeve-jointed with the coupling. Besides, a fluid is fully filled in a hollow portion of the transparent sphere through the channel of the sealing device and the pressure thereof is applied on the rubber sheath of the sealing device to seal up the channel of the coupling for preventing leakage.

[0005] The merits of the present invention include: adopting PU elastic material; containing a fluid to present a specific visual effect; possible for making larger spherical balls than glass ones, and filling glowing pieces, looking fantastic particularly in nighttime.

[0006] For more detailed information regarding advantages or features of the present invention, at least an example of preferred embodiment will be described below with reference to the annexed drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

[0007] The related drawings in connection with the detailed description of the present invention to be made later are described briefly as follows, in which:

[0008] Figure 1 is a perspective view of an elastic ball constructed in accordance with an embodiment of the present invention;

[0009] Figure 2 is a perspective view of a sealing device of elastic ball of the present invention before assembling;

[0010] Figure 3 is a top view of a coupling of the elastic ball of the present invention;

[0011] Figure 4 is a cross-sectional view showing the using state of the sealing device of the elastic ball of the present invention;

[0012] Figure 5 is a cross-sectional view showing the state of the sealing device of the elastic ball of the present invention under pressure;

[0013] Figure 6 is a perspective view of an elastic ball constructed in accordance with another embodiment of the present invention;

[0014] Figure 7 shows an enlarged partial portion of a sealing device of the present invention;

[0015] Figure 8 is a perspective view of an elastic ball constructed in accordance with yet an embodiment of the present invention under use before a sealing device is assembled; and

[0016] Figure 9 is a perspective view of an elastic ball of yet an embodiment of the present invention under use after a sealing device is assembled.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

[0017] With reference to the drawings and in particular to Figure 1, an elastic ball is comprised of a surface layer 1 of a hollow sphere made of transparent polyurethane (PU), a sealing device 2, and a fluid 3 fully filled in a hollow portion enclosed by the surface PU layer 1. In a preferred embodiment, the surface layer 1 is a surface layer of polyurethane. The fluid 3 could be air, liquid, with ornamental pieces 31. For example, the fluid 3 is air, water, or some kind of oil, doped with the ornamental pieces 31, such as sparkles, or sparkles in fish shape, for creating the visual floating effect.

[0018] The sealing device 2, attached on the transparent surface PU layer 1 as shown in Figures 2 and 3, is comprised of a coupling 21 and a rubber sheath 22, in which the coupling 21 is formed by overlapping conic bodies 21A, 21B, 21C one after another in the order from the smallest conic body 21A all the way up to the largest conic body 21C, which are provided with an inscribed tangential common point C at their base circumferences and the coupling 21 has a channel 211 defined in the middle

conic body 21B as indicated in Figure 3, and the rubber sheath 22 is externally sleeve-jointed with the coupling 21 as illustrated in Figures 4 and 5.

[0019] The fluid 3 which is fully filled in a hollow portion enclosed by the surface PU layer 1 as shown in Figure 1 and mentioned above is poured into the hollow portion by inserting a needle P in the channel 211 of the coupling 21, in which the pressure created by the fluid 3 will push the rubber sheath 22 of the sealing device 2 to seal up an opening at the inner end of the channel 211 of the coupling 21 (shown in Figure 5) for preventing the fluid 3 from flowing out of the elastic ball of the present invention.

[0020] In addition, an elastic ball constructed in accordance with another embodiment of the present invention shown in Figure 6 comprises a transparent surface layer 4 of a hollow sphere, a sealing device 5, and a fluid 6 fully filled in the hollow portion of the surface layer 4, in which a preferred embodiment of the surface layer 4 is a surface layer made of polyurethane (PU). The fluid 6 could be air, liquid, with ornamental pieces 61. For example, the fluid 6 is air, water, or some kind of oil, doped with the ornamental pieces 61, such as sparkles, or sparkles in fish shape, for creating the visual floating effect.

[0021] The transparent surface layer 4 of a hollow sphere has a designated thickness T as shown in Figure 7, and the sealing device 5 is attached thereon. The sealing device 5 is comprised of a tapered inserting portion 51, an imbedding portion 52, and a sealing portion 53, in which the tapered inserting portion 51 is out-and-out buried in the surface layer 4, the thickness of the imbedding portion 52 is about the same with T of the surface layer 4, and the diameter of the sealing portion 53 is greater than the imbedding portion 52 so that leakage of the inside fluid is preventable.

[0022] As indicated in Figures 8 and 9, the sealing device 5 comprises a breakable part 54 and a longitudinal rod part 55. After the needle P shown in Figure 1 is applied to inject the fluid 6 into the hollow portion inside the surface layer 4, the sealing device 5 is then plugged in the entrance to enable the tapered inserting portion 51 to be buried thoroughly under the surface layer 4, in which the thickness of the imbedding portion 52 of the sealing device 5 is about the same with the thickness T of the surface layer 4, and the sealing portion 53 is greater in diameter than that of the imbedding portion 52, therefore, a worker is supposed to fracture the breakable part 54 and seal the ball with the sealing portion 53.

[0023] To speak in short, the elastic ball of the present invention can serve for a toy or an ornament made of polyurethane (PU), containing a fluid inside to present a floating visual effect, in which the fluid is guided into a hollow sphere and prevented from being leaked by a sealing device.

[0024] A method for manufacturing an elastic ball is presented hereunder, without any intention of limiting the scope of the present invention.

[0025] The procedure is comprised of: spraying a de-molding agent on surface of an upper-half and a lower-half mold; positioning the sealing device 2 at a positioning needle of the upper-half mold; injecting PU material in the lower-half mold in a quantity depending on the size and thickness of the ball; covering the upper-half mold on the lower-half mold and closely fixing the halves together with tenons; placing it in a rotary forming machine to produce the PU surface layer 1 of hollow sphere, which is to be taken out depending on the curing conditions of the PU material; injecting fluid 3 (water or oil) with the ornaments 31 (sparkles or pieces), into the transparent PU hollow sphere by means of inserting the needle P in the channel 211 of the coupling 21 to complete the elastic ball.

[0026] In the above described, more than one preferred embodiment have been described in detail with reference to the drawings annexed, and it is apparent that numerous changes or modifications may be made without departing from the true spirit and scope thereof, as set forth in the claims below.